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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,330	01/14/2002	Andrew G. Cartlidge	PRP102US	9906

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EXAMINER	
VERBITSKY, GAIL KAPLAN	
ART UNIT	**PAPER NUMBER**
2859	

DATE MAILED: 01/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/047,330	CARTLIDGE, ANDREW G.	
	Examiner	Art Unit	
	Gail Verbitsky	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16 and 18-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,18,22-24,26 and 28* is/are rejected.

7)☒ Claim(s) *16,19-21,25 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *11/17/2003* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1, 3-10, 12-13,15, 18, 22-24, 26, 28 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyuki et al. (U.S. 5876327) [hereinafter Tsuyuki] in view of Kyrazis (U.S.5666202).

Tsuyuki discloses in Fig. 1 an optical system comprising an optical sensor (CCD camera) 48 having an array of light receptors having a pixel pitch, a lens (imaging lens system) 43 associated with the camera along the optical path, the lens configured with optical parameters (magnification, and numerical aperture with a stop 44) that should inherently be compatible (functionally related) to the camera and thus, to the pitch and a desired (effective) resolution (col. 7, lines 46-47) of the camera, and the optical system. The lens, along with a variable stop 44, can map an image (a portion) of an object to associated light receptors of the camera. Inherently, there is an illumination source (visible or non-visible) to illuminate the object.

For claims 15, 22, 24, 28: according to formula (5), the numerical aperture is functionally related to a ratio of a wavelength (lambda) of a light illuminating the object and a frequency, while the frequency is related to an effective resolution, thus, the

numerical aperture is functionally related to a ratio of a wavelength (lambda) of light illuminating the object and the effective resolution.

For claims 4, 13 and 18: as shown in equations in col. 8, the desired (allowed) resolution is limited (at least equal/ minimum) by diffraction limit in the extremely small aperture diameter (spot size). Also, the particular value (size) of a resolution, as stated in claims 4, 13 and 18, absent any criticality, is only considered to be the "optimum" value of the resolution for the system disclosed by Tsuyuki that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy of the device, the intended use, etc. *In re Boesch, 205* USPQ 215 (CCPA 1980).

For claim 22: the numerical aperture of the optical system including lens related to the pixel pitch and the wavelength (col. 7, formula (5) and col. 16, line 40). This would imply, that the aperture is functionally related to the ratio of the two.

For claim 7: the device comprises an aspherical lens (col. 9, line 43).

For claim 8: a first lens 43 positioned closer to an object and having the focal length minus 38.308 which is less than the focal length of plus 12.496 of the second lens 46 positioned closer to the camera 48 (col. 13, lines 14-50 and Fig. 13).

Tsuyuki does not explicitly teach the lens having diffraction limited spot size, as stated in claim 1, and the remaining limitations of claims 1, 3-10, 12-13,15, 18, 22-24, 26, 28.

Kyrazis teaches a device in the field of applicant's endeavor and teaches that a lens, inherently associated with an optical sensor, and focused onto a target (along an

optical path), has a diffraction limited spot size. The lens has a resolution (optical parameter) determined by a diffraction limited spot size. Resolution also can be determined by pixels. For a specified resolution, the field of view can be limited by a total number of pixels in focal plane detectors. Thus, the lens is operative to map a diffraction limited spot size onto an associated receptor (pixel). According to formula (1.1), the smallest spot size ***d*** can be selected.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lens system disclosed by Tsuyuki, so as to have lens capable of correlating the diffraction limited spot size to an associated receptor (pixel0, as taught by Kyrazis, so as to have the system correctly mapping an object to the pixels, in order to obtain a true image of the object.

With respect to claims 23, 26, 28: the particular size of the pixel pitch of the receptors, i.e., 20%, 5% of a diffraction limited spot size, absent any criticality, is only considered to be the "preferred" or "optimum" size that the [person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the desired resolution, etc. see in re Boesch, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the pixel pitch of the receptors within 5 or 20 % of the diffraction limited spot size, so as to obtain a desired resolution.

3. Claims 2, 14 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyuki and Kyrazis as applied to claims 1, 3-10, 12-13, 15, 18, 22-24, 26, 28 above, and further in view of Ishihara (U.S.5737084).

Tsuyuki and Kyrazis disclose the device as stated above in paragraph 2.

They do not teach the limitations of claims 2, 14.

Ishihara teaches the device in the field of applicant's endeavor wherein the magnification (optical parameter) of the image-forming lens is selected according to the pixel pitch (col. 9, lines 55-67). Than would imply that the magnification and the pixel pitch are functionally related, and thus, in a broad sense, it is considered that, the magnification will be functionally related to any ratio which includes the pixel, and thus, to the ratio including the pixel pitch and a desired resolution.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the magnification, functionally related to the pixel pitch and thus, in a broad sense, to the ratio of the desired resolution and the pixel pitch, as taught by Ishihara, so as to be able to adjust the magnification by knowing the desired resolution and the pixel pitch.

4. Claim 11 is finally rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyuki and Kyrazis as applied to claims 1, 3-10, 12-13, 15, 18, 22-24, 26, 28 above, and further in view of Pollard et al. (U.S. 6249360) [hereinafter Pollard].

Tsuyuki and Kyrazis disclose the device and the method as stated above in paragraph 2.

They do not explicitly state that the illumination source is an LED.

Pollard discloses a system wherein an illumination source is an LED.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the illumination source, disclosed by Tsuyuki and Kyrazis, with the LED, as taught by Pollard, because both of them are alternate types of illumination sources which will perform the same function of illumination an object of interest, if one is replaced with the other.

Allowable Subject Matter

5. Claims 16, 19-21, 25, 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claims 1-15, 18, 22-24, 26 have been considered but are moot in view of the new ground(s) of rejection necessitated by the present amendment.

Applicant states that claim 1 requires to "map a portion of an object having the desired resolution", etc. This argument is not persuasive because this limitation is not stated in claim 1. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

Applicant states that claim 1 requires to "map a portion of an object having a desired resolution along the optical path to one light receptor", etc. This argument is not persuasive because this limitation is not stated in claim 1. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

Applicant states that references do not have "a resolution parameter that is correlated with the pixel pitch of its CCD sensor". This argument is not persuasive because this limitation is not stated in the claims. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Verbitsky who can be reached at (703) 306-5473 Monday through Friday 7:30 to 4:00 ET.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-5473.

GKV

Gail Verbitsky
Primary Patent Examiner, TC 2800

12 January 2004